



# **PATTERNING MECHANISMS IN DEVELOPMENT**

**SOCIETY FOR DEVELOPMENTAL BIOLOGY**

**1996 ANNUAL SYMPOSIUM**

**May 30 - June 4**

**Vanderbilt University, Nashville, TN**

**Program Organizer: William Jeffery**

**Program Committee:**

**David Bader, William Jeffery, David Kimelman, and Janet Rossant**

**Local Organizing Committee:**

**Brigid Hogan, William Jeffery, Billie Swalla, and Christopher Wright**

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PROGRAM FOR THE 1996 ANNUAL SYMPOSIUM**

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**THURSDAY, May 30**

10:00 AM      **Registration Opens**

1:00 PM      **Introduction**      William Jeffery, SDB President

1:05-4:35 PM      **Plenary Session I**

***Evolution of Developmental Mechanisms***

Billie Swalla (Chairperson)

Billie Swalla (Vanderbilt)

Molecular analysis of ascidian development and evolution

Philip Ingham (London)

*Hedgehog* signalling in vertebrate and invertebrate development

Break

Jane Dorweiler (Minnesota)

*teosinte glume architecture 1*: A key locus in maize evolution

Rudolf Raff (Indiana)

Reorganization of developmental mechanisms during evolution

(4:45-8:00 PM SDB Board of Trustees Meeting)

Dinner

8:00 PM      **E. G. Conklin Medal Presentation and Lecture**

Janet Rossant (President-elect, presiding)

9:00 PM      Welcome Reception for New SDB Members at Poster Exhibit

FRIDAY, May 31

8:30 - 12:00 AM      **Plenary Session II**

**Signalling and Patterning Mechanisms**      Brigid Hogan (Chairperson)

Lilianna Solnica-Krezel (Vanderbilt)

Genetic analysis of gastrulation in zebrafish

Lee Niswander (Sloan-Kettering)

Growth and patterning in the vertebrate limb

Break

Michael Hoffman (Wisconsin)

Genetic dissection of signalling by *Drosophila decapentaplegic*

Elizabeth Robertson (Harvard)

Nodal signalling and axis determination in the mouse

Lunch

1:20 - 3:10 PM      **Contributed Paper Sessions** (2 parallel sessions)

**Session I**      Janet Rossant (Chairperson)

1:30 PM The genes encoding bone morphogenetic proteins 8A and 8B (BMP8A and 8B) are required for normal spermatogenesis and fertility in the mouse. Guang-Quan Zhao, Keyu Deng, Patricia Labosky, Lucy Liaw, and Brigid L. M. Hogan (Vanderbilt)

1:55 PM *Xenopus VegT*: A novel putative transcription factor localized in the vegetal cortex of the oocyte is involved in dorsal-ventral patterning. Jian Xiang and Mary Lou King (Miami)

2:20 PM Identification of nine distinct homeobox gene classes in sea anemones with a phylogenetic re-analysis of homeobox genes in the phylum *Cnidaria*. John R. Finnerty and Mark Q. Martindale (Chicago)

2:45 PM Suppression of terminal flower formation in pea - evolutionary implications. Susan R. Singer, Sonja L. Maki, John Solliger, Heidi Mullen, Jenny Fick, and Andy McCall (Carlton)

**Session II**      David M. Miller III (Chairperson)

1:30 PM Regulating neural specificity genes. David M. Miller III, James Y.-J. Meir, Amy Pflugrad, Jennifer Ross, and Angela R. Winnier (Vanderbilt)

1:55 PM Roles of fringe and dishevelled products in *Xenopus* gastrulation and neural patterning. Sergei Y. Sokol, Melinda Fan, and Keiji Itoh (Harvard)

2:20 PM Pattern formation in the visual centers of the *Drosophila* brain. Sam Kunes, Carl Aschkenasi, Soohye Chung, Zeng Huang, He Qi, and Hong Yang (Harvard)

2:45 PM Multiple functions for *Pax6* in development of the mouse eye and nasal epithelium. Jane C. Quinn, John D. West, and Robert E. Hill (Edinburgh)

Break

3:35 - 6:00 PM **Minisymposia** (2 parallel sessions)

***Fertilization and Egg Activation in Mammals*** Richard Schultz (Chairperson)

Gregory Kopf (Pennsylvania)

Signal transduction pathways regulating mammalian sperm capacitation and the acrosome reaction

Paul Primakoff (Connecticut)

Sperm-egg plasma membrane interactions

Karl Swann (London)

A soluble sperm protein that triggers calcium oscillations in mammalian eggs

Richard Schultz (Pennsylvania)

Activation of the embryonic genome

***Transcriptional Control of Development***

William Klein (Chairperson)

William Klein (M. D. Anderson)

Orthodenticle-related genes and differentiation of ectoderm lineages in the sea urchin embryo

Tom Kaufman (Indiana)

*Cis* and *trans*-acting elements that define expression domains in the homeotic genes of *Drosophila*

Eric Olson (Texas Southwestern)

Transcriptional control of muscle specific genes

Stuart Orkin (Harvard)

Transcription factors and control of transcription in hematopoiesis

Dinner

7:30 PM **Educational Issues Workshop** Judith Heady and Rich Nuccitelli (Chairpersons)

Jan Toumi (National Research Council)

Effective roles for scientists in science education

Karen Falkenberg (Emory)

College undergraduate science majors can stimulate educational reform

Richard Nuccitelli (UC-Davis)

Improving science education in elementary schools: You can make a difference

8:40 PM **Concurrent Education Sessions** (4 parallel sessions)

John Doctor (Duquesne)

Student research projects in a developmental biology teaching lab: Why and how?

Kathryn Tosney (Michigan)

Using simple origami to help students understand three-dimensional changes in development

Eric Liebl (Wisconsin) and Tim Schuh (St. Cloud)

Using *Xenopus* and *Drosophila* in your developmental biology lab - a practical guide

Judith Heady (Michigan)

Teaching developmental biology without lectures using original research articles  
accompanied by an investigative projects laboratory

9:30 PM Mixer at Posters

## SATURDAY, June 1

8:30 - 12:00 AM      **Plenary Session III**

***Localization and Determinants***

William Jeffery (Chairperson)

Paul Macdonald (Stanford)

Deployment of spatial cues in the *Drosophila* oocyte

Kenneth Kemphues (Cornell)

Understanding mechanisms of cytoplasmic localization in *C. elegans*

Break

Bruce Bowerman (Oregon)

Specification of blastomere identity in the early *C. elegans* embryo

Yuh Nung Jan (UC San Francisco)

Asymmetric cell division and sister cell fate specification in the nervous system

Lunch

**Special Interests Luncheon Session**

Karen Crawford (Chairperson)

***Bridging the gap between classical and molecular developmental biology***

Speakers:      Jay Lash

John Saunders, Jr.

1:30 - 5:00 PM      **Plenary Session IV**

***Patterning in Embryogenesis***

Christopher Wright (Chairperson)

Richard Behringer (M. D. Anderson)

Studies of the vertebrate head organizer

Matthew Scott (Stanford)

The hedgehog/patched pathway in insect and vertebrate development

Break

Peter Mombaerts (Rockefeller)

Targeting olfaction

Peter Holland (Reading)

Evolution of developmental patterning systems during vertebrate origins and radiation

Dinner

8:00 PM Poster Session (Authors should be present at their posters)

SUNDAY, June 2

8:30 - 12:00 AM **Plenary Session V**

**Molecular Analysis of Regeneration**

Susan Bryant (Chairperson)

Susan Bryant (UC Irvine)

*Hox* genes, growth factors, and nerves in regenerating axolotl limbs

Steven Clark (Michigan)

The regulation of continuous organ formation in plants

Break

Marie-Andree Akimenko (Ottawa)

Genetic control of fin regeneration in zebrafish

Larry Marsh (UC Irvine)

Genetics of pattern generation and regeneration in *Drosophila* appendages

Lunch

1:30 - 3:10 PM **Contributed Paper Sessions** (2 parallel sessions)

**Session III** David Bader (Chairperson)

1:30 PM Myogenin-null myoblasts fuse with wild type myoblasts, in vivo. Anita Myer, Daniel S. Wagner, Eric N. Olson, and William Klein (M. D. Anderson and Texas Southwestern)

1:55 PM The role of the organizer in *Xenopus* left-right asymmetry. Nanette Nascone and Mark Mercola (Harvard)

2:20 PM Determination and patterning of the vascular system in *Xenopus*. Margaret S. Saha, Jennifer A. Oakes, Rebecca R. Miles, and Tina Tenenhaus (William and Mary)

2:45 PM Nodal related genes in *Xenopus* development. Karuna Sampath and Christopher V. E. Wright (Vanderbilt)

**Session IV** David Greenstein (Chairperson)

1:30 PM The POU-homeobox gene *ceh-18* is a crucial determinant of gonadal sheath cell function during oogenesis of *Caenorhabditis elegans*. David Greenstein and Tokiko Furuta (Vanderbilt)

1:55 PM *C. elegans* germline RNA helicases: Are they all components of the P granules? K. Kuznicki, M. Gruidl, P. Smith, S. McCrone, and K. Bennett (Missouri)

2:20 PM Formation of the ectoderm-endoderm boundary in the sea urchin. Catriona Y. Logan and David R. McClay (Duke)

2:45 PM The *Drosophila* *fish-hook* gene encodes a novel HMG domain protein essential for anterior/posterior pattern formation. John R. Nambu and Patricia A. Nambu (Massachusetts)

Break

3:35 - 6:00 PM **Minisymposia** (2 parallel sessions)

**Developmental Genetics** Elizabeth Raff (Chairperson)

Hermann Steller (MIT)

Genetic control of apoptosis in *Drosophila*

Marnie Halpern (Carnegie)

Genetic analysis of patterning in the zebrafish nervous system

Craig Mello (Massachusetts)

Cell fate specification and germ-line determination in early *C. elegans* embryos

Elizabeth Raff (Indiana)

Genetic analysis of microtubule function in *Drosophila*: the role of the cytoskeleton in cell-cell interactions in development

**Morphogenesis** Carol Erickson (Chairperson)

Carol Erickson (UC Davis)

Avian neural crest cells migrate into the skin only if they are specified as melanocytes

Robert Ho (Princeton)

Fate map and gene expression in the vertebrate tailbud

Kathy Barton (Wisconsin)

Formation and maintenance of the shoot apical meristem in *Arabidopsis*

Barry Gumbiner (Sloan Kettering)

The role of C-cadherin in *Xenopus* gastrulation movements

Dinner

8:00 PM **Keynote Lecture**

Walter Gehring (Basel)

The role of *eyeless* as a master control gene in eye morphogenesis and evolution

9:30 Reception for Keynote Speaker at Poster Exhibit

### MONDAY, June 3

8:30-12:00 AM **Plenary Session VI**

**Pattern Formation and Plant Meristems** Judith Croxdale (Chairperson)

Nancy Kerk (UC Berkeley)

The root meristem: new views on organization and function

Judy Jernstedt (UC Davis)

Angle meristems: developmental switch hitters

Break

Vivian Irish (Yale)

Genetic analysis of petal and stamen development in *Arabidopsis*

Charles Ainsworth (London)

Sex determination in single-sexed flowers

Lunch

1:30 PM- 6:00 PM    **Plenary Session VII**

***Molecular Basis of Organogenesis***

Paul Krieg (Chairperson)

Paul Krieg (Texas)

Homeodomain genes in heart development

Rolf Bodmer (Michigan)

*tinman* is heart-broken without *wingless*

Break

Ulrike Heberlein (UC-San Francisco)

Mechanisms of *Drosophila* retinal morphogenesis: role of *hedgehog* and *decapentaplegic* in furrow progression

Jonathan Bard (Edinburgh)

Mouse kidney development: the inductive interactions

6:15 PM        **SDB Business Meeting**

7:30 PM        **Banquet, Awards Ceremony, and Departure Party**

**TUESDAY, June 4**

Departure